

**STATE OF CALIFORNIA  
CONSUMER POWER AND CONSERVATION  
FINANCING AUTHORITY**

In the Matter of:	)	
	)	
Establishment of Target Reserve Level for	)	Rulemaking No. 2002-07-01
The California Power Authority	)	
Investment Plan	)	July 24, 2002
_____	)	

**COMMENTS OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR**

The California Independent System Operator Corporation ("CA ISO") respectfully submits these comments in accordance with the July 24, 2002, notice of rulemaking by the Consumer Power and Conservation Power Authority ("CPA") regarding establishment of a target reserve level for the California Power Authority Investment Plan. The CA ISO provides herein its initial thoughts on the five questions listed in the notice and some additional thoughts based on its experience in the California electricity market. The CA ISO looks forward to further discussion regarding capacity reserve requirements.

**I) Response to Specific CPA Questions.**

1. *Considering the fundamental difference between the current generation market and the past, does the historical reserve level reflect the greater reliability risks of the present and the future?*

The CA ISO believes that the existing electricity market is inherently more complicated than the heavily regulated structure that existed prior to the advent of competition. Such complexity is a result of the introduction of competitive market forces, and numerous market players, into the previously more monopolistic electricity industry. With such complexity necessarily comes added risk, both with respect to prices

in the market and reliability. With respect to the latter, historically, regulatory agencies could ensure a level of infrastructure investment necessary to satisfy a prescribed standard of reliability. In contrast, in today's market environment, investment decisions (at least with respect to supply resources) are primarily left to market participants, who base their investment strategies and decisions on a myriad of factors (e.g., future anticipated prices, cost of capital, fuel prices, projected and available demand, weather, political/regulatory environment, etc.) -- factors that are not easily predictable and constant. Thus, these private investment decisions can have a direct and indirect impact on reliability.

On a long-term basis investors can decide not to build new infrastructure and thereby compromise reliability. In addition, when making long-term investment decisions investors may repeatedly choose to invest in a single resource or fuel type (e.g., natural gas fired combined cycle unit), thus limiting a region's ability to flexibly respond to fuel shortages or fuel price increases and thereby increasing the risk of supply shortages.

Thus, in assessing reliability risks it is important to consider the operating characteristics of particular types of resources, and the percentage of the resource mix which they comprise. For example, hydro resources are sensitive to hydrological conditions, and wind and solar resources are intermittent. In addition, the location of new generating sources can affect their usefulness in maintaining control area reliability. For example, an abundance of new generation in one area (perhaps an area with easy access to fuel and water supplies) may be of little use to the system as a whole if the ability to distribute such power to the rest of the system is limited by transmission

constraints. All of these market-driven decisions and factors can adversely impact reliability.

In addition, on a short-term basis, absent an obligation to perform, the owners of privately financed and controlled resources can also choose not to make such resources generally available to the market (i.e., *physically withhold* such resources from the market). The ability of resources to purposely not make their resources available to the system operator for dispatch can severely limit the operators' ability to maintain grid reliability.

As a result of these uncertainties, those dependent on such resources to ensure reliable service to load (i.e., consumers) cannot necessarily be sure that such resources will be available to reliably serve load – either from a long-term investment standpoint or with respect to the day-to-day availability of these resources.<sup>1</sup> Thus, in a competitive market environment, there is a critical need to create a viable and stable platform to support infrastructure investment and to ensure the day-to-day availability of resources to serve load.

The CA ISO is hopeful that its ongoing Market Design 2002 ("MD02") initiative will help accomplish those objectives. For example, the CA ISO's proposed Available Capacity ("ACAP") Obligation is intended to support investment in critical infrastructure while ensuring that existing and new resources are made available to the market on a day-to-day basis to serve load and maintain reliability. However, it is evident that the CA

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<sup>1</sup> However, along with that added risk comes the potential for greater rewards. The underlying predicate of electric market restructuring is that competitive market forces will provide less expensive and more diverse services than those provided under the heavily-regulated vertically-integrated utility structure of the past.

ISO's efforts alone cannot achieve such an outcome. Thus, the CA ISO supports the CPA's efforts to develop, through this rulemaking, an internal investment strategy that will further investment in critical infrastructure in a manner that recognizes the legitimate reliability needs of the system and considers critical matters such as the appropriate state-wide resource mix and fuel diversity.

The CA ISO recommends that when establishing a target reserve level for purposes of its own investment strategy, the CPA incorporate and consider the relative reliability risks associated with particular types of resources. Working with the CA ISO and others, the CPA should establish a methodology that determines that the eligible capacity of different types of resources considering location, fuel-type diversity, and other factors that can impact system reliability. Specifically, the CA ISO recommends that the CPA develop and incorporate measures for/recognize: the *net dependable capacity* of resources, daily and seasonal variations in resource availability, the probability of forced outages, and transmission constraints.

2. *Given the recent cancellations and delays, and the uncertainty of the financial community, how many of the proposed plants will actually come on line, and under what terms and conditions?*

The CA ISO is not privy to detailed information on investment decisions regarding proposed new generation projects. The California Energy Commission ("CEC"), which is responsible for permitting new generating plants, is likely in a better position to answer these questions than the CA ISO. However, recognizing the exigent circumstances in the development and financial communities, collective action on the part of all parties is necessary to stabilize and provide incentives for investment in new generation. The CA ISO can and will do its part by proposing and establishing a set of

clear and stable market and operating rules. The future of proposed plants is also clearly dependent on the California Public Utilities Commission's ("CPUC") initiative to establish the rules for procurement by the California Investor Owned Utilities ("IOUs"). Particularly given the uncertainty in the financial community, generating plants are unlikely to obtain financing without clear rules on how sales from generators to buyers will be treated. Since the IOUs represent the bulk of the buyers in California, the CPUC's procurement rules will be key to whether new generation will develop in California.

*3. What will the lingering effects of behavioral conservation be, and what are the permanent effects?*

Again, the CA ISO is not the best entity to address this question. Nonetheless, the CA ISO has observed that behavioral conservation resulting from public media announcements is generally short lived. For example, while a certain level of conservation continues today, much of the conservation experienced during the 2000-2001 electricity crisis has abated. In the end, the CA ISO believes that conservation is more likely to be sustained if appropriate price signals are in place, coupled with enabling technologies for load to respond to such signals.

The CA ISO has attempted to facilitate the participation of load-based resources in its MD02 proposal. The CA ISO recognizes that the CPA has also begun to facilitate and support the development of demand response programs. The CA ISO recommends that the CPA continue these efforts and explicitly marry these efforts with this rulemaking and therein explicitly incorporate and allow load-based resources to participate in and satisfy its internal target reserve level investment objectives. Moreover, in furtherance of state public policy objectives and consistent with its statutory

mandate, it is appropriate for the CPA to propose a target participation level for load-based resources as part of its internal investment strategy.

4. *What effect will significant rate increase have on load and consumption patterns?*

The CA ISO presumes that this question is intended to primarily address retail rate setting/impact issues and therefore the CA ISO offers no opinion on this matter at this time.

5. *What impact will the new market design elements approved by FERC on July 17, 2002 and those still pending have on system loads and procurement practices?*

As the CPA is aware, while the FERC's July 17, 2002 order regarding the CA ISO's MD02 proposal accepted certain aspects of the CA ISO's proposal, it also set forth a process for discussing and resolving issues regarding other aspects of the CA ISO's proposal. Thus, in light of this ongoing development and evaluation of the CA ISO's MD02 proposal, it is difficult to predict the final form of the CA ISO's MD02 proposal and thus assess its impact on system loads and procurement practices. However, as a general matter and as proposed, the CA ISO believes that the MD02 proposal should have a positive impact on established procurement practices. This assumes that all of the elements of the MD02 proposal (or acceptable alternatives) are ultimately approved by FERC.

A primary objective of the CA ISO's MD02 proposal is to move operating and procurement decisions from real-time into the forward market, thus reducing the need for the CA ISO to take actions in real-time and further supporting reliable system operation. For example, the proposed ACAP Obligation is intended to encourage load serving entities to procure adequate resources in the forward markets and hence promote operational reliability. Moreover, by providing incentives for forward procurement and

contracting, the CA ISO is also hopeful that such a mechanism will promote investment in both the generation and load-based resources necessary to satisfy the obligation. However, the CA ISO recognizes that such procurement incentives and practices are highly dependent on CPUC procurement rules and the general conditions in both the financial and electricity markets. Finally, the CA ISO acknowledges that FERC, through its Notice of Proposed Rulemaking regarding a Standard Wholesale Market Design ("SMD NOPR"), as well as others, have proposed alternative resource adequacy mechanisms whose purpose is to facilitate the forward-market procurement of, and investment in, adequate resources. The CA ISO supports, through the established FERC process, the ongoing effort to collaboratively develop a resource adequacy mechanism that satisfies the above-identified objectives.

## **II) General Considerations: The CPA's Adopted target Reserve Level Should Satisfy Minimum Operating Reliability Requirements**

The CA ISO concurs with the CPA's view that establishment of a target reserve level in the state can have far-reaching effects on the electricity market in California and the reliability of the West. While the CA ISO recognizes that the CPA is proposing to establish a target reserve level for purposes of defining its own investment strategy, the CA ISO believes that such a reserve level should be consistent with and complement whatever appropriate state-wide reserve level is established, and existing reliability council standards. Thus, the target reserve level should be aligned with that ultimately established by the CPUC with regard to IOU investment and procurement practices and also aligned with the existing and future reserve levels established by municipal governments, as well as any requirements adopted by FERC and Western Electricity Coordinating Council ("WECC"). Target reserve levels may need to be differentiated

based on their purpose (i.e. CPA investment, planning, ACAP, operating reserve, etc.) but the relationship between these different levels should be understood and aligned. Absent such alignment, disparate reserve level obligations and requirements could create improper incentives and cost-shifting where adjacent systems and utilities inappropriately lean on one another.

The CA ISO believes that the reserve level requirements must at a minimum, allow the CA ISO to satisfy its statutory obligation under Assembly Bill 1890 (AB 1890) to "*ensure efficient use of and reliable operation of the transmission grid consistent with the achievement of planning and operating reserve criteria no less stringent than those established by the Western Systems Coordinating Council*" (now the WECC). In fact, the CA ISO believes that it may be necessary and appropriate for the CPA and others to establish a state-wide longer-term reserve level that is *higher* than the levels adopted by the CA ISO.

The CA ISO recognizes that the target reserve level to be established by the CPA likely relates to a longer term planning horizon than that proposed by the CA ISO in its MD02/ACAP proposals<sup>2</sup>, which has as its focus assuring operational reliability. Nonetheless, ideally, the resources developed under a longer term planning horizon should be adequate to meet the CA ISO's operating requirements.

The CA ISO developed its ACAP proposal with the objective of encouraging load serving entities to procure adequate supplies in the forward markets, and hence permitting the real time market to operate as a true imbalance energy market. Thus, the

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<sup>2</sup> The CA ISO refers the CPA to its MD02 proposal filed with FERC on May 1 and June 17, 2002 (the proposal is posted on the CA ISO's website at <http://www.caiso.com/docs/2002/05/29/200205290858531076.html>).



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ACAP obligation is specifically focused on promoting operational reliability consistent with the CA ISO's core function of providing non-discriminatory and reliable transmission service to all customers, and its statutory responsibility to ensure efficient use and reliable operation of the transmission grid consistent with achievement of planning and operating reserve criteria no less stringent than those established by the WECC.

Given the focus on operational reliability, the CA ISO's proposal is based on applicable WECC operating reserve requirements. In effect, the CA ISO proposed to translate the WECC's *daily* operating requirements into a *monthly* obligation for load serving entities to procure an amount of resources necessary to satisfy forecast load plus reserves. Through establishment of this obligation, the CA ISO is attempting to establish an incentive for the rational forward-market procurement of resources by load-serving entities. Specifically, the CA ISO proposed to convert daily reserve levels to a monthly number by adjusting the daily reserve level requirements to account for load forecast error and outages beyond the expected outage level.

Based on such a methodology, the CA ISO calculates that the monthly reserve responsibility under its ACAP proposal would be between 10-12%. This is based on a 8-9% daily reserve requirement (operating reserves plus regulation) and on a net dependable capacity figure – historic output rather than installed capacity – with a further adjustment for forced outages. Given that this monthly figure is adjusted to account for load forecast errors and for forced outages, it would likely require further revision by the CPA to convert it to a longer-term target reserve level.

It is worth noting that reserve margins based on net dependable capacity alone, do not include forced outages. In order to reconcile the two, reserve margins based on one measure may be converted to the other, by taking into account the expected (or historical) forced outage rates of different resources. For example, with a forced outage rate of 5%, a 12% margin based on monthly ACAP, would correspond to an 18% margin based on the net dependable capacity ( $1.12 / 0.95 = 1.18$ ). Furthermore, if the net dependable capacity is assumed on the average to be 95% of the nameplate capacity (using the example figures stated in CPA Rulemaking), then this would correspond to an installed capacity margin of 24% ( $1.18 / 0.95 = 1.24$ ).

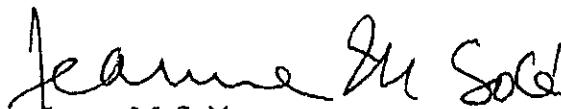
A traditional measure and one that is in use in the Eastern ISOs and California municipal utilities is a level of reserve that would correspond to no more than one-day-in-ten-years loss of load probability ("LOLP"). A general rule of thumb is that this level of LOLP is achieved with a reserve margin of 18% based on net dependable capacity (see FERC SMD NOPR; footnote on page 266). The following table derived by the CA ISO's Department Market Analysis, provides LOLP measures for various levels of reserve margin (based on net dependable capacity, a uniform forced outage rate, and proper geographical dispersion vis-à-vis transmission constraints), based on a normal distribution, and assuming that 18% reserve margin does indeed correspond to one-day-in-ten-years LOLP:

Reserve Margin		10%	12%	15%	18%	20%
LOLP: Days in 10 years		2.32	1.89	1.38	1.00	0.80
LOLP: 1 day in x years with x =		4.30	5.29	7.25	10.00	12.46

### III. Conclusion.

The CA ISO respectfully submits these initial thoughts and looks forward to participating in the CPA rulemaking on a target reserve level.

Respectfully submitted this 26<sup>th</sup> of August, 2002 by:



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